UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,396	10/30/2001	Franciscus W.A. Dirne	PHN 14,359C	5222

7590 05/11/2004

Corporate Patent Counsel
U.S. Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
MCDONALD, RODNEY GLENN	
ART UNIT	**PAPER NUMBER**
1753	

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 20040430

Application Number: 10/022,396
Filing Date: October 30, 2001
Appellant(s): DIRNE ET AL.

Christopher R. Pastel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed Feb. 13, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 9 and 10 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

03-267363	Satoru et al.	11-1991
0123826	Waldkircher	11-1984

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 10 is rejected under 35 U.S.C. 102 (a) as being anticipated by Satoru et al. (Japan 03-267363). This rejection is set forth in the Office Action of the Paper mailed July 15, 2003 and is set forth below.

Satoru et al. teach a process in which a thin film containing one or more of groups IIIB, IVA and IVB elements as a middle layer 3 of about 10-5,000 Angstroms is deposited on the surface 2 of a core material 1 of a magnetic head on which a magnetic recording medium slides and then a thin boron nitride film 4 having about 1-60 ratio of B to N is formed on the middle layer 3. A magnetic head 7 having improved wear resistance of the surface 2 and satisfactory adhesion of the film 4 is obtained. (See Abstract)

The method forms a magnetic head with an improved wear resistance and the middle layer 3 improves the adhesion of the boron nitride thin film layer. (See Abstract)

Figure 1 shows the transducing gap 5. Different materials are present in different areas as seen in Figure 3. (See Figures 1 and 3)

Inherently the materials have different sensitive to corrosion. Given that the outer surface layer is the protecting layer it is more corrosion resistant since it protects.

Claim 9 is rejected under 35 U.S.C. 103 as being obvious over Satoru et al. (Japan 03-267363) in view of Waldkircher (EP 0 123 826). This rejection is set forth in the Office Action of the Paper mailed July 15, 2003 and is set forth below.

Satoru et al. is discussed above and all is as applies above. (See Satoru et al. discussed above)

The differences between Satoru et al. and the present claims is that replacing the BN with another nitride material such as titanium nitride is not discussed.

Waldkircher teach DC sputtering a layer of titanium carbide, chromium carbide or titanium nitride less than 0.2 microns onto a magnetic head. (See Waldkircher Abstract; Applicant's specification page 1)

The motivation for utilizing a layer of titanium nitride is that it allows for providing a wear resistant coating to a magnetic head. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art the art at the time the invention was made to have replaced the BN wear resistant layer of Satoru et al. with a wear resistant layer of titanium nitride as taught by Waldkircher because it provides the required wear resistance for a magnetic head.

(11) Response to Argument

RESPONSE TO THE 35 U.S.C. 102 (A) ARGUMENTS OF CLAIM 10 REJECTED OVER SATORU ET AL.:

In response to the argument that Satoru et al. is silent with regard to corrosion resistance, it is argued that Satoru et al. suggest that the outer layer of boron nitride has ***"superior chemical stability"***. The ***"superior chemical stability"*** of Satoru et al. is believed to suggest that the film will be stable (i.e. will not break down) under environments containing chemical elements. This suggests corrosion resistance of the boron nitride film since corrosion resistance is understood to be resistance of chemical elements in an environment. Since Satoru et al. suggest a metal nitride, boron nitride, as the outer layer it must also inherently be corrosion resistant. As to the corrosion

resistance of the underlying layer of Group IIIa, IVa and IVb some of these elements for the underlying layer are identical to Appellants. For instance titanium and hafnium can be utilized for the underlying layer. Given that titanium and hafnium are utilized by Appellants these elements must inherently provide the necessary corrosion resistance for the head face. The corrosion resistant metals of titanium and hafnium among others are highlighted in Appellant's specification for instance on page 3 lines 6-14. (See Satoru et al. discussed above)

In response to the argument that Satoru et al. is silent on forming a first material that is more sensitive to corrosion than materials in the head face, it is argued as discussed above that the first material (i.e. Ti and Hf) provides corrosion resistance for said head face (i.e. Appellant's specification page 3 lines 6-14) and that the boron nitride layer has "superior chemical stability" over the first material layer since it provides the necessary wear resistance for the head. (See discussion above and Satoru et al. discussed above)

In response to the argument that Satoru et al. is silent on formation of a second material of a wear-resistant material that is more insensitive to corrosion than the first material, it is argued that Satoru et al. as discussed above and teach a layer of boron nitride that has "superior chemical stability" as compared to the middle layer or underlayer of a metal. Furthermore, similarly to Appellant Satoru et al. teach a metal layer and a metal nitride layer. The metal layer is recognized to be less wear resistant than the metal nitride layer and more sensitive to chemical wear as recognized by Satoru et al. (See Satoru et al. discussed above)

In response to the argument that the Examiner is making an unwarranted assumption regarding the inherency of the corrosion resistance of the two layers, it is agued that the Examiner's reasoning of inherency is based upon the teachings of Satoru et al. which recognize that the outer layer of metal nitride, boron nitride, is superior in chemical stability and provides the wear resistance that is needed to protect the underlying head and layer. (See Satoru et al. discussed above)

RESPONSE TO THE ARGUMENTS OF THE 35 U.S.C. 103 REJECTION OF CLAIM 9 AS OBVIOUS OVER SATORU ET AL. IN VIEW OF WALDKIRCHER:

In response to the argument that there is no motivation in Waldkircher to use a middle layer as used by Satoru et al., it is argued that Satoru et al. teach that the middle layer assists with the adhesion of the thin boron nitride film. (See Satoru et al. Abstract) This is precisely a requirement by Appellant. (See Appellant specification Page 3 lines 19-20)

In response to the argument that there is no motivation in Satoru et al. to use a material other than boron nitride as the outer layer, it is argued that one would readily envisage interchanging the metal nitrides of boron nitride and titanium nitride since both serve the function of wear protection. (See Satoru et al. and Waldkircher discussed above)

In response to the argument that the thickness requirements of Claim 9 are not taught by Satoru et al. or Waldkircher, it is argued that Satoru et al. teach the required thickness for the middle layer (i.e. 1-500nm) which is required by Appellant's claims. Waldkircher teach that the metal nitride layer that protects a magnetic head should be

less than 200 nm. While Appellant argues in their Brief that Waldkircher teach that the protective metal nitride layer should be *at least 200 nm* this contradicts what Appellant's specification states. ***In Appellant's on page 1, line 26, of the admitted prior art EP 0 123 826 to Waldkircher teach that the metal nitride or metal carbide layer is thinner than 0.2 microns (i.e. 200 nm). This is thinner (i.e. less) than 200 nm.***

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
April 30, 2004

Conferees

APPEAL CONFEREE:

NN

DM

DOUGLAS MCGINTY
QUALITY ASSURANCE SPECIALIST
TECHNOLOGY CENTER 1700

Corporate Patent Counsel
U.S. Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

NAM NGUYEN appeal conferee
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700